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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/396,352	09/14/1999	TUMAY O. TUMER	NOVA-002-USA	7308

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EXAMINER
HUANG, SIHONG

ART UNIT	PAPER NUMBER
2632	

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/396,352	TUMER, TUMAY O.	
	Examiner	Art Unit	
	Sihong Huang	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-74* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-74* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1 This Office Action is responsive to the amendment filed 11/14/02. As directed by the amendment, new claims 71-74 are added. Thus, claims 27-74 are presently pending in this application with claims 27 and 28 being the independent claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 28, 49-68, 70, 72 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carroll (4,857,893) in view of Goff (6,154,137) and Nova et al. (6,136,274 and 6,329,139).

Regarding claim 28, Carroll discloses an ID tag for application to objects (col. 3, lines 11-20) comprising in combination: an application specific IC on a die (98, see Fig. 9) having; a signal receiving system for receiving data containing information and programming into the IC, and a data processing system for reading out information from the IC (col. 3, lines 37-57, col. 9, lines 31-68, and col. 11, lines 17-27); an antenna (20) for receiving and transmitting information from the IC to a receiver (12); and a power storage means for storing the radio wave energy received by the antenna and for supplying energy to the IC (C1, col. 7, lines 58-66, col. 8, lines 3-7), wherein all components are located on the die (col. 11, line 11 to col. 12, line 51). Carroll differs from the claimed invention in that Carroll does not disclose that the antenna is dipole antenna. However, as taught by Goff in col. 5, lines 11-45, the antenna geometry and properties

depend on the desired operating frequency of the RFID portion of the tag, dipole antennas are typically selected for higher operating frequencies comparing to spiral or coil antennas. Goff in Fig. 7 shows a tag with dipole antenna (23b) and Fig. 8 shows a tag with spiral or coil antenna (23c). In addition, Nova '274 in col. 21, line 48 to col. 22, line 7 and Nova '139 in col. 74, line 55 to col. 75, line 20 clearly disclose the use of either dipole or loop type antenna in RFID, because higher operating frequency tag is faster in recording/reading than a lower operating frequency tag, Nova also turned to Carroll '893 for reference of a single chip transponder device that the antenna is integrated with a single chip for simple manufacture process. Thus, it would have been obvious to an artisan of ordinary skill at the time of the invention that the tag of Carroll can be modified to use dipole antenna for receiving and transmitting data at a higher frequency for faster recording and/or reading. In addition, although dipole antennas tend to be larger in size, integrating dipole antennas onto the same IC die is do-able except for maybe a larger size IC chip. Therefore, it would have been obvious to an ordinary person skilled in the art to utilize dipole antenna to the tag of Carroll with the teachings of Goff and Nova for a faster recording and/or reading tag operating at a higher operating frequency.

Regarding claims 49-52, as addressed above, Goff discloses that utilizing dipole antenna for receiving RF energy and/or transmitting information in security tags are well known and well used in the art (col. 5, lines 11-45). In addition, Carroll discloses a component that stores radio wave energy received by the antenna and powers the ID tag (C1, col. 7, lines 58-66 and col. 8, lines 3-7).

Regarding claim 53, although Carroll does not disclose that energy can be received from the claimed sources (i.e., microwaves, infrared, visible light and ultraviolet light), such particular energy source is well known in the art and therefore an obvious modification to the ID tag of Carroll (see Nova documents as addressed above).

Regarding claims 54 and 55, Carroll discloses a nonvolatile memory (PROM, EEPROM, see col. 9, lines 52-60).

Regarding claims 56 and 57, although Carroll doesn't specifically disclose a multiplexer component for controlling flow of information and data or a pulse generating circuit component, providing such well known and well used components in a transponder is extremely well known in the art and therefore an obvious modification to the tag of Carroll (also see Nova documents as addressed above).

Regarding claims 58-61, although Carroll does not specifically disclose that the receiving and/or transmitting information is in the specific form (e.g., analog or digital), converting one to another by using an A/D or D/A converter is a well known technique in the art and therefore an obvious modification to the tag of Carroll (also see Nova documents).

Regarding claim 62, Carroll discloses a clock generator circuit component (col. 4, lines 55-57).

Regarding claim 63, Carroll discloses a shift register circuit component (76).

Regarding claim 64, although none of Carroll, Goff and Nova specifically discloses that the antenna component for transmitting information is a back scatter type antenna, Carroll in lines 1-15 of the abstract discloses a back scatter type signal transmission system and utilizing back scatter type of dipole antenna in tags is well known in the art and therefore an obvious modification to the modified tag of Carroll, Goff and Nova.

Regarding claim 65, although Carroll does not specifically disclose the claimed materials being used to build or mount the IC on, such materials used in making tags are well known in the art and therefore an obvious modification to the tag of Carroll depending on the type of article the tag attached to.

Regarding claims 66-68, although Carroll does not disclose that the IC contains test and monitoring control circuitry, incorporating additional functionality, capability, circuit, or device

to the tag is well known in the art and therefore an obvious modification to the modified tag of Carroll, Goff and Nova.

Regarding claim 70, although none of the documents specifically disclose the claimed receiving frequency (i.e., between 10 GHz and 16 GHz), Nova '274 in col. 22, line 6 and Nova '139 in col. 76, lines 14-15 disclose the preferred frequency range being microwave (between 800MHz and 300 GHz) which covers the claimed frequencies. Thus, it would have been obvious to operate at the claimed frequency range for a faster recording and/or reading tag.

Regarding claim 72, Carroll in line 17 of the abstract clearly discloses that the integrated circuit is a monolithic device.

Regarding claim 74, Carroll in Fig. 9A clearly shows a data processing system (100, 102, 104).

4. Claims 27-48, 69, 71 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carroll (4,857,893) in view of Goff (6,154,137) and Nova et al. (6,136,274 and 6,329,139) as applied to claim 28 above, and further in view of Murdoch (5,153,583).

Regarding claim 27, the modified tag of Carroll, Goff and Nova as addressed above in claim 28 further differs from claim 27 in that it doesn't specifically disclose two separate antennas for receiving and transmitting. However, as evidenced by Murdoch in col. 13, lines 14-17, providing two separate antennas in place of a single antenna for receiving and transmitting signals in tag device for better reception and simple circuit design is well known in the art and therefore an obvious modification to the modified tag of Carroll, Goff and Nova. In addition, Nova '139 in col. 75, lines 34-39 discloses that an additional antenna can be provided (on the

back of the chip) and tuned for a different frequency range, thus utilizing the two antennas for transmitting and receiving at different frequencies would have been obvious to the modified tag of Carroll, Goff, Nova and Murdoch.

Regarding claims 29-32, as addressed above, Goff discloses that utilizing dipole antenna for receiving RF energy and/or transmitting information in security tags are well known and well used in the art (col. 5, lines 11-45). In addition, Carroll discloses a component that stores radio wave energy received by the antenna and powers the ID tag (C1, col. 7, lines 58-66, col. 8, lines 3-7).

Regarding claim 33, although Carroll does not disclose that energy can be received from the claimed sources (i.e., microwaves, infrared, visible light and ultraviolet light), such particular energy source is well known in the art and therefore an obvious modification to the ID tag of Carroll (see Nova documents as addressed above in claim 28 for different sources).

Regarding claims 34 and 35, Carroll discloses a nonvolatile memory (PROM, EEPROM, see col. 9, lines 52-60).

Regarding claims 36 and 37, although Carroll doesn't specifically disclose a multiplexer component for controlling flow of information and data or a pulse generating circuit component, providing such well known and well used components in a transponder is extremely well known in the art and therefore an obvious modification to the tag of Carroll.

Regarding claims 38-41, although Carroll does not specifically disclose that the receiving and/or transmitting information is in the specific form (e.g., analog or digital), converting one to another by using an A/D or D/A converter is a well known technique in the art and therefore an obvious modification to the tag of Carroll.

Regarding claim 42, Carroll discloses a clock generator circuit component (col. 4, lines 55-57).

Regarding claim 43, Carroll discloses a shift register circuit component (76).

Regarding claim 44, although neither Carroll nor Goff specifically disclose that the antenna component for transmitting information is a back scatter type antenna, Carroll in lines 1-15 of the abstract discloses a back scatter type signal transmission system and utilizing back scatter type of dipole antenna in tags is well known in the art and therefore an obvious modification to the modified tag of Carroll and Goff.

Regarding claim 45, although Carroll does not specifically disclose the claimed materials being used to build or mount the IC on, such materials used in making tags are well known in the art and therefore an obvious modification to the tag of Carroll depending on the type of article the tag attached to.

Regarding claims 46-48, although Carroll does not disclose that the IC contains test and monitoring control circuitry, incorporating additional functionality, capability, circuit, or device to the tag is well known in the art and therefore an obvious modification to the modified tag of Carroll and Goff.

Regarding claim 69, although none of the documents specifically disclose the claimed receiving frequency (i.e., between 10 GHz and 16 GHz), Nova '274 in col. 22, line 6 and Nova '139 in col. 76, lines 14-15 disclose the preferred frequency range being microwave (between 800MHz and 300 GHz) which covers the claimed frequencies. Thus, it would have been obvious to operate at the claimed frequency range for a faster recording and/or reading tag.

Regarding claim 71, Carroll in line 17 of the abstract clearly discloses that the integrated circuit is a monolithic device.

Regarding claim 73, Carroll in Fig. 9A clearly shows a data processing system (100, 102, 104).

5. Claims 27-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murdoch (5,153,583) in view of Goff et al. (6,154,137) and Nova et al. (6,136,274 and 6,329,139).

Regarding claim 27, Murdoch discloses an ID tag (transponder, see Fig. 1) for application to objects (col. 1, lines 14-15 and col. 8, lines 58-65) comprising in combination: an application specific IC die (IC chip, see Figs. 17 and 18) having; a signal receiving system for receiving data containing information and programming into the IC (col. 7, lines 27-29 and col. 8, lines 26-31); a data processing system for reading out information from the IC (col. 7, lines 27-29 and col. 8, lines 22-26); a first antenna for receiving radio wave energy (col. 13, lines 14-17); a power storage means (Cs) for storing the radio wave energy received by the first antenna and for supplying energy to the IC (col. 13, lines 64-66, col. 14, lines 44-49 and col. 18, lines 39-42); and a second antenna for transmitting information from the IC to a receiver (col. 13, lines 14-17). Murdoch differs from the claimed invention in that Murdoch does not disclose that the antennas are dipole antennas. However, as taught by Goff in col. 5, lines 11-45, the antenna geometry and properties depend on the desired operating frequency of the RFID portion of the tag, dipole antennas are typically selected for higher operating frequencies comparing to spiral or coil antennas. Goff in Fig. 7 shows a tag with dipole antenna (23b) and Fig. 8 shows a tag with spiral or coil antenna (23c). In addition, Nova '274 in col. 21, line 48 to col. 22, line 7 and Nova '139 in col. 74, line 55 to col. 75, line 20 clearly disclose the use of either dipole or loop type antenna in RFID, because higher operating frequency tag is faster in recording/reading than a lower operating frequency tag, Nova also discloses that it is preferred to integrate the antenna with a single chip for simple manufacture process. Furthermore, Nova '139 in col. 75, lines 34-39 discloses two antennas can be provided and tuned to different frequency ranges for operation. Thus, it would have been obvious to an artisan of ordinary skill at the time of the invention that the tag of Murdoch can be modified to use dipole antenna for receiving and transmitting data at a higher frequency for faster recording and/or reading. In addition, although dipole antennas tend

to be larger in size, integrating dipole antennas onto the same IC die is do-able except for maybe a larger size IC chip. Therefore, it would have been obvious to an ordinary person skilled in the art to utilize dipole antenna to the tag of Murdoch with the teachings of Goff and Nova for a faster recording and/or reading tag operating at a higher operating frequency.

Regarding claim 28, Murdoch discloses an ID tag (transponder, see Fig. 1) for application to objects (col. 1, lines 14-15 and col. 8, lines 58-65) comprising in combination: an application specific IC on a die (IC chip, see Figs. 17 and 18) having; a signal receiving system for receiving data containing information and programming into the IC (col. 7, lines 27-29 and col. 8, lines 26-31); a data processing system for reading out information from the IC (col. 7, lines 27-29 and col. 8, lines 22-26); an antenna for receiving and transmitting information from the IC to a receiver (col. 8, lines 14-31); and a power storage means (Cs) for storing the radio wave energy received by the antenna and for supplying energy to the IC (col. 13, lines 64-66, col. 14, lines 44-49 and col. 18, lines 39-42), wherein all components are located on the die (col. 18, lines 29-32). Murdoch differs from the claimed invention in that Murdoch does not disclose that the antenna is dipole antenna. However, as taught by Goff in col. 5, lines 11-45, the antenna geometry and properties depend on the desired operating frequency of the RFID portion of the tag, dipole antennas are typically selected for higher operating frequencies comparing to spiral or coil antennas. Goff in Fig. 7 shows a tag with dipole antenna (23b) and Fig. 8 shows a tag with spiral or coil antenna (23c). In addition, Nova '274 in col. 21, line 48 to col. 22, line 7 and Nova '139 in col. 74, line 55 to col. 75, line 20 clearly disclose the use of either dipole or loop type antenna in RFID, because higher operating frequency tag is faster in recording/reading than a lower operating frequency tag, Nova also discloses that it is preferred to integrate the antenna with a single chip for simple manufacture process. Furthermore, Nova '139 in col. 75, lines 34-39 discloses two antennas can be provided and tuned to different frequency ranges for operation. Thus, it would have been obvious to an artisan of ordinary skill at the time of the invention that

the tag of Murdoch can be modified to use dipole antenna for receiving and transmitting data at a higher frequency for faster recording and/or reading. In addition, although dipole antennas tend to be larger in size, integrating dipole antennas onto the same IC die is do-able except for maybe a larger size IC chip. Therefore, it would have been obvious to an ordinary person skilled in the art to utilize dipole antenna to the tag of Murdoch with the teachings of Goff and Nova for a faster recording and/or reading tag operating at a higher operating frequency.

Regarding claims 29-32 and 49-52, as addressed above, Goff and Nova disclose that utilizing dipole antenna for receiving RF energy and/or transmitting information in security tags are well known and well used in the art (col. 5, lines 11-45). In addition, Murdoch discloses a component (Cs.) that stores radio wave energy received by the antenna and powers the ID tag (col. 13, lines 64-66, col. 14, lines 44-49 and col. 18, lines 39-42).

Regarding claims 33 and 53, although Murdoch and Goff do not disclose that energy can be received from the claimed sources (i.e., microwaves, infrared, visible light and ultraviolet light), such particular energy source is well known in the art and Nova documents disclose microwave and optical sources as addressed above and therefore the claimed source is an obvious modification to the ID tag of Murdoch.

Regarding claims 34, 35, 54 and 55, Murdoch discloses a nonvolatile memory (col. 14, line 68; also see Figs. A, B and E).

Regarding claims 36 and 56, although Murdoch does not specifically disclose a multiplexer component, Murdoch in col. 8, lines 16-31 discloses multiple information or data can be extracted from the received carrier signal, a multiplexer component for controlling the flow of such information or data would have been obviously included in the tag of Murdoch.

Regarding claims 37 and 57, although Murdoch does not specifically disclose a pulse generating circuit component, providing such well known and well used component in a

transponder is extremely well known in the art and therefore an obvious modification to the tag of Murdoch.

Regarding claims 38-41 and 58-61, although Murdoch does not specifically disclose that the receiving and/or transmitting information is in the specific form (e.g., analog or digital), converting one to another by using an A/D or D/A converter is a well known technique in the art and therefore an obvious modification to the tag of Murdoch.

Regarding claims 42 and 62, Murdoch discloses a clock generating circuit component (col. 16, lines 6-7).

Regarding claims 43 and 63, Murdoch discloses a shift register circuit component (see Fig. 16B).

Regarding claims 44 and 64, although neither Murdoch nor Goff specifically discloses that the antenna component for transmitting information is a back scatter type antenna, providing a back scatter type antenna in a tag is extremely well known in the art (as disclosed by Carroll and being addressed above) and therefore an obvious modification to the modified tag of Murdoch, Goff and Nova.

Regarding claims 45 and 65, although Murdoch does not specifically disclose the claimed materials being used to build or mount the IC on, such materials used in making tags are well known in the art and therefore an obvious modification to the tag of Murdoch depending on the type of article the tag attached to.

Regarding claims 46-48 and 66-68, although Murdoch does not disclose that the IC contains test and monitoring control circuitry, incorporating additional functionality, capability, circuitry and/or device to the tag is well known in the art and therefore an obvious modification to the tag of Murdoch.

Regarding claims 69 and 70, although none of the documents specifically disclose the claimed receiving frequency (i.e., between 10 GHz and 16 GHz), Nova '274 in col. 22, line 6 and Nova '139 in col. 76, lines 14-15 disclose the preferred frequency range being microwave (between 800MHz and 300 GHz) which covers the claimed frequencies. Thus, it would have been obvious to operate at the claimed frequency range for a faster recording and/or reading tag.

Regarding claims 71 and 72, although Murdoch does not specifically disclose that the integrated circuit is a monolithic device, such device is well known and well used in the art and therefore an obvious modification to the device of Murdoch.

Regarding claims 73 and 74, Murdoch in Fig. 7E clearly shows a data processing system.

Response to Arguments

6. Applicant's arguments filed 11/14/02 have been fully considered but they are not persuasive.

Applicant in the remarks argued that the applied secondary references in the art rejections above are not qualified to be prior art because of the Declaration of Tumay Tumer filed on 11/14/02 which showed an earlier date (August 6, 1997) which is the submission/filing of the phase II proposal for governmental funding on the instant invention. However, as of the submission of the phase II proposal on August 6, 1997, applicant merely showed that a simple patch antenna was tested/used on the tag, no further research, study or test were made on the suggested or claimed dipole antennas due to lack of funding, not even when the present application was filed on 9/14/99. Although dipole antenna was suggested to be studied in the future, similar to the proposals and Declaration of Tumay Tumer filed 11/14/02, the present application filed on 9/14/99

stated that merely a simple patch antenna was executed/used (see specification on page 43, lines 1-5). In other words, no actual testing or further study were made upon filing of the present invention on 9/14/99 regarding the use of dipole antenna on the tag, not to mention that applicant admitted that problems/difficulties and benefits of the use of different types of antennas on tags. Therefore, the applied secondary references in the art rejections are qualified to be prior art due to the reasons stated above. In addition, the claimed limitation of specifying the antenna(s) to be dipole antenna(s) in the independent claims 27 and 28 may raise a question of new matter needed support from the original filed application.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications; please mark "EXPEDITED PROCEDURE")

Or:

(703) 872-9314, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sihong Huang whose telephone number is (703) 305-3966.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu, can be reached on (703) 308-6730.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Customer Service Office whose telephone number is (703) 306-0377.

S. Huang
February 7, 2003

DANIEL J. WU
PRIMARY EXAMINER
02/07/03